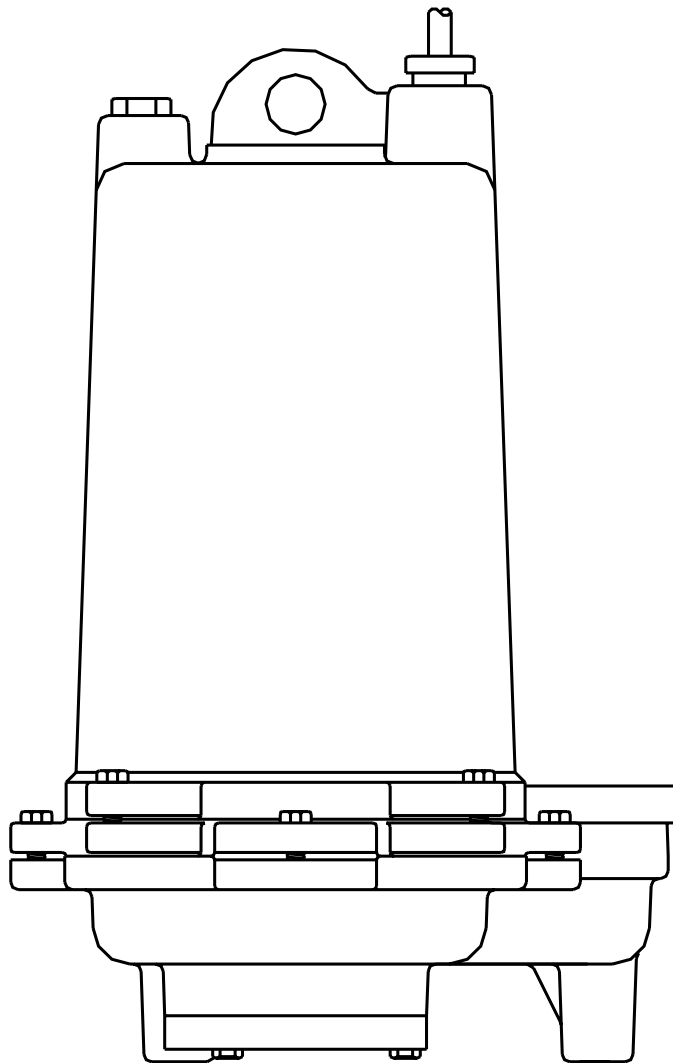


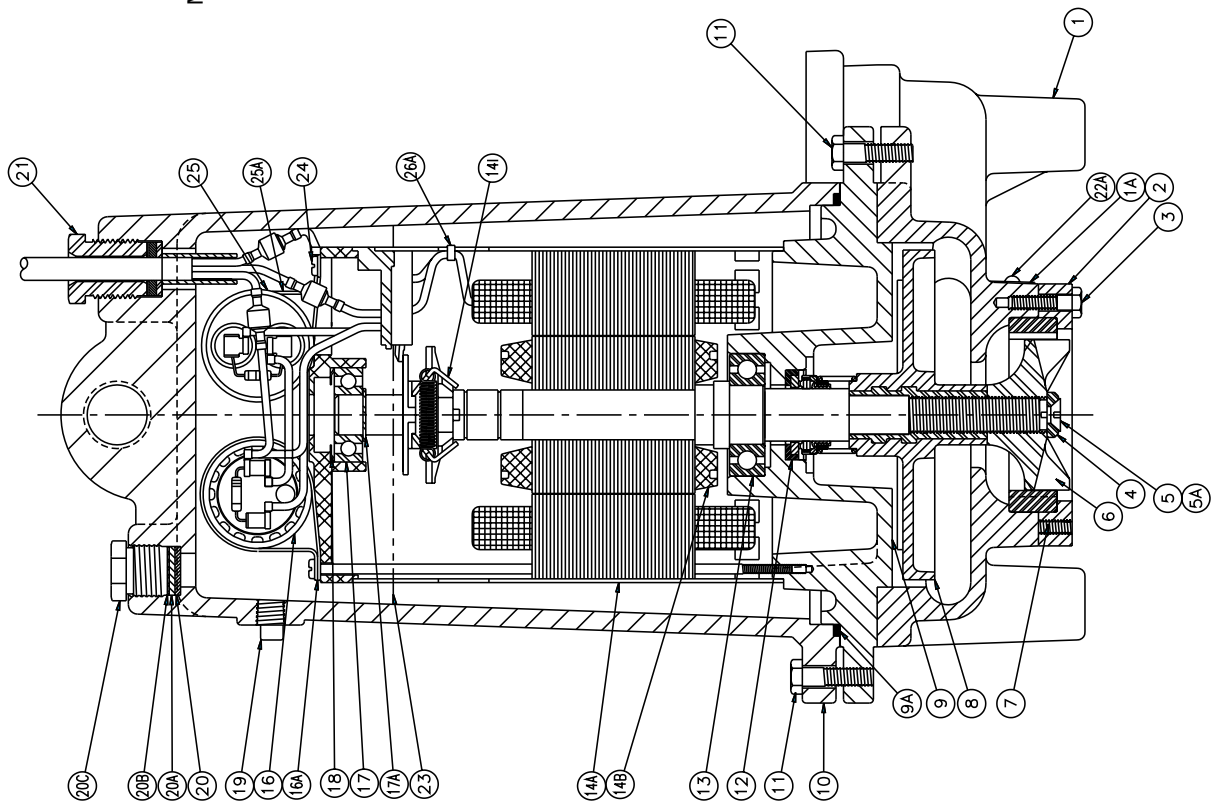
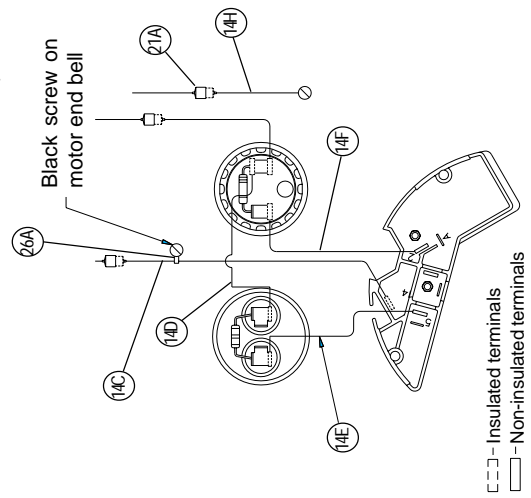
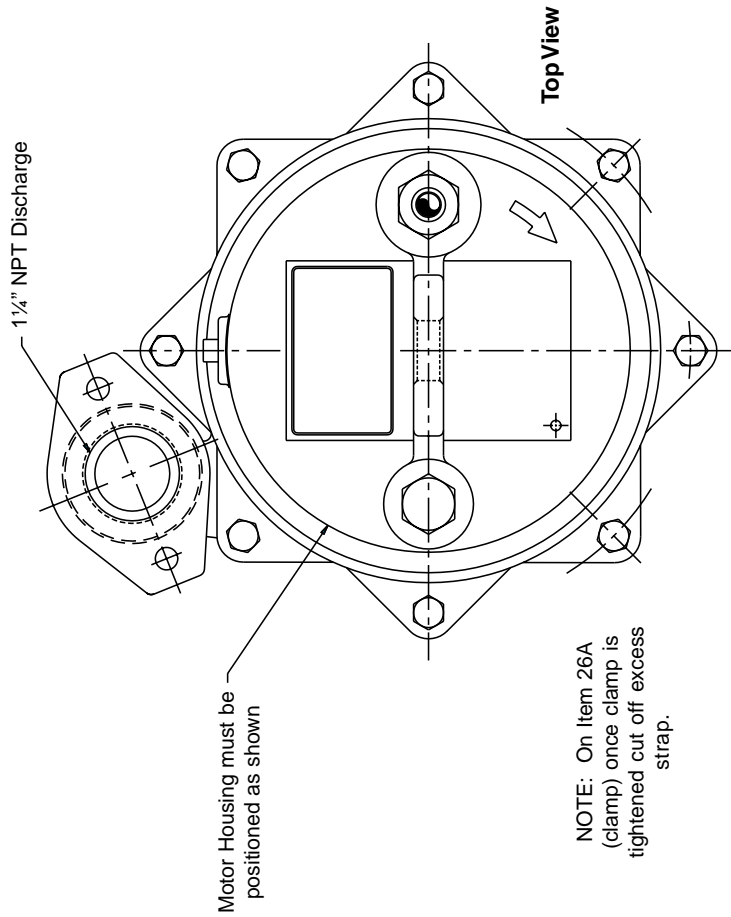
## 2HP Centrifugal Grinder Pump

Installation & Service Manual  
with Parts List

Grinder Pump for Residential and Pressure Sewer Applications



**NOTE!** To the installer: Please make sure you provide this manual to the owner of the pumping equipment or to the responsible party who maintains the system.



## PARTS LIST AND SAFETY CAUTIONS

| Ref No. | Part No.   | Description                               |
|---------|------------|---|
| 1       | 26433D002  | Case, volute                              |
| 2       | 21584B000  | Flange, w/shredding ring                  |
| 3       | 19099A012  | Screw, cap 1/4" x 1" long., SST (3 req'd) |
| 4       | 21583B000  | Retainer, impeller, SST                   |
| 5       | 07597A018  | Screw, flat head, 1/4" x 3/4" long        |
| 5A      | 14550A001  | Sealant, Loctite grade 271                |
| 6       | 21582B000  | Impeller, grinding                        |
| 7       | 05013A039  | Screw, set 1/4" x 3/8" long (2 req'd)     |
| 8       | 26434C010  | Impeller, pump plastic                    |
| 8       | 26434C000  | Impeller, cast iron (optional)            |
| 9       | 26430D001  | Plate, seal/bearing                       |
| 9A      | 05014A181  | Gasket, tetraseal 7" x 6-3/4" x 1/8"      |
| 10      | 25327D000  | Housing, motor                            |
| 11      | 19100A012  | Screw, cap, 5/16" x 1-1/4" long (8 req'd) |
| 12      | 21576A010  | Seal, 7/8" shaft                          |
| 13      | 08565A018  | Bearing, lower                            |
| 14A     | 26466C101  | Stator, w/shell, 2 hp, 230v, 1 ph         |
| 14B     | 26466C002  | Rotor, w/shaft                            |
| 14C     | 09859A827  | Wire, w/term., black, 9" long             |
| 14D     | 09859A828  | Wire, w/term., black 4-1/2" long          |
| 14E     | 09859A829  | Wire, w/term., yellow, 4" long            |
| 14F     | 09859A830  | Wire, w/term., red, 3" long               |
| 14H     | 09859A832  | Wire, w/term., green, 6" long             |
| 14I     | 24481A008  | Switch, mechanical                        |
| 16      | 12141A015  | Capacitor, start with resistor            |
| 16A     | 20333A001  | Clip, Capacitor                           |
| 17      | 08565A013  | Bearing, upper                            |
| 17A     | 12558A030  | Ring, retaining                           |
| 18      | 19331A005  | Washer, spring finger                     |
| 19      | 05022A092  | Plug, pipe 1/4 NPT                        |
| 20      | 05030A235  | Washer, SST, 3/32" thick                  |
| 20A     | 05014A193  | Gasket, rubber                            |
| 20B     | 05030A234  | Washer, SST, 1/32" thick                  |
| 20C     | 25341A002  | Nut, solid                                |
| 21      | 25338B001  | Cord, power                               |
| 23      | 11009A003K | Oil, transformer                          |
| 24      | 21813B145  | Switch, float                             |
| 25      | 23838A010  | Capacitor, run with resistor              |
| 25A     | 20333A004  | Clip, capacitor                           |
| 26A     | 17190A004  | Clamp                                     |

### USAGE

The D1C20-21 Series is a submersible wastewater grinder pump designed specifically for individual residential and pressure sewer applications. The pump is to be used for domestic sewage only and not to be used for pumping commercial or industrial sewage such as motels, schools, apartments, factories, etc. **THIS PUMP IS NOT FOR USE IN HAZARDOUS LOCATIONS!**

### INSTRUCTIONS

These instructions cover only the grinder pump unit. Separate instructions for the basin system are included with the basin. Pump is not to be disassembled except at a certified service station or at the factory. **WARRANTY IS VOID IF PUMP IS TAKEN APART FOR ANY REASON EXCEPT TO REPLACE GRINDER IMPELLER, VOLUTE CASE/GRINDING RING.**

### INSPECTING PUMP

Before making any piping or electrical connections, check the pump for shipping damage or cracks. Using a flat screwdriver placed in the slot on the shaft end, turn shaft and impellers to be sure they are free. **DO NOT TURN IMPELLER WITH FINGERS AS EDGES ARE SHARP.**



**⚠ CAUTION! NEVER WORK ON THE UNIT WITHOUT DISCONNECTING THE ELECTRICAL POWER CORD.**

### POWER SUPPLY

The D1C20-21 Series grinder pump should only be connected to a 230 volt, single phase, 60 Hz power source. The pump will draw approximately 9.1 amperes at minimum flow and 15.0 full load amperes. Locked rotor current is 51.9 amperes. The pump must be connected to a grounded power socket. **DO NOT** cut off the ground pin from the power cord plug.

### POWER CORD

A 20 foot power cord is attached to the grinder pump via three insulated quick-disconnect terminals. To replace a cord simply unscrew (turn counterclockwise) cord nut from top of motor housing. Once cord nut is completely loosened from housing, gently pull cord upwards away from housing. While cord is being pulled, it may be necessary to shift cord leads back and forth to guide the insulated terminals through the hole in the motor housing. Once the terminals have cleared the hole, gently pull cord until terminals are completely outside of motor housing. Then simply disconnect terminals to remove cord.

To install new cord, reconnect terminals (black to black, white to white, green to green), and guide terminals back through hole in motor housing. Once terminals have passed through the hole, retighten the cord nut into housing. Tighten nut firmly but do not over tighten.

The power cord should be replaced if it has been damaged in any way or the cord jacket has become brittle with age.

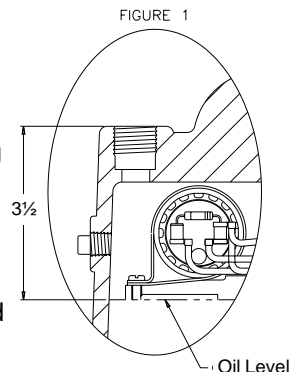
### MOTOR TYPE

The D1C20-21 Series grinder pump contains a 3/4 frame, 2 HP, single phase, 60 Hz, 3450 R.P.M., capacitor start - capacitor run motor with Class F insulation and built-in on-winding overload protection. Motor has upper and lower ball bearings, and is oil-cooled and lubricated. Resistance at motor leads is 1.8 ohms.

**⚠ CAUTION: THE D1C20-21 SERIES GRINDER PUMP SHOULD NEVER BE WORKED ON WITHOUT FIRST DISCONNECTING THE POWER CORD.**

### OIL TYPE

The motor housing contains dielectric transformer oil to provide good heat transfer and lubrication of ball bearings, no other lubrication is required. Oil level may be checked by removing the nut (item 20C) and washers from the top of the motor housing. The oil level should be 3-7/8" from the boss (see figure 1) with pump setting vertically. **Do not over fill with oil.** Only dielectric transformer oil obtained from an authorized service center should be used.



## PUMP SWITCH INSTALLATIONS

| Ref No. | Part No.  | Description   |
|---------|-----------|---------------|
| 24      | 21813B145 | Switch, float |

### PUMP SWITCH INSTALLATION INSTRUCTIONS

**NOTE:** In accordance to third party approval, pump must be submerged a minimum of 8½" from bottom of the legs on volute case during operation.

#### Mounting the Switch

1. Determine pumping range for installation (see Figures A and B). Do not tether less than 3.5 inches (9 cm) from pipe.
2. Tighten strap around discharge pipe keeping switch cable between strap and pipe to prevent slippage (see Figure C).
3. Space small ties at least 1 inch (2.5 cm) apart (see Figure C). To readjust ties, press small tie tabs down.
4. To lock releasable tab, run remaining strap between tab and head. Tuck strap back through head (see Figure C).

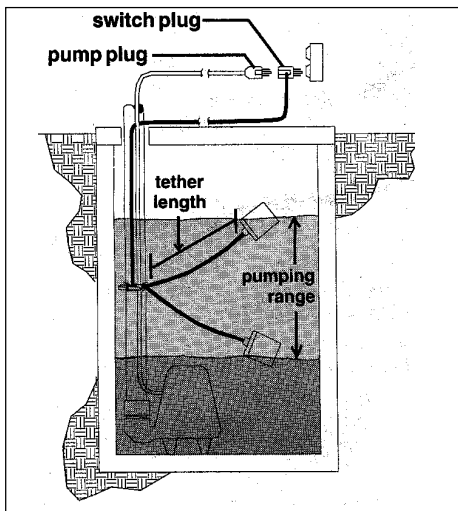


Fig. A

#### Piggy-Back Plug Install

- ▲ Electrical outlet must not be located in pump chamber.
  - ▲ Electrical outlet voltage, piggyback plug voltage, and pump voltage must match.
1. Follow steps 1 through 4 of "Mounting The Switch."
  2. Insert switch's piggy-back plug into outlet.
  3. Plug pump into piggy-back plug (see Figure A).
  4. Check installation. Allow system to cycle to insure proper operation.

| Determining Pumping Range<br>In Inches (1 inch = 2.5 cm) |     |    |    |    |    |    |    |  |
|--|-----|----|----|----|----|----|----|--|
| tether length  | 3.5 | 6  | 10 | 14 | 18 | 22 | 24 |  |
| pumping range  | 7   | 10 | 16 | 22 | 28 | 33 | 36 |  |

Use only as a guide. Pumping ranges are based on testing in non-turbulent conditions. Range may vary due to water temperature and cord shape. Note: As the tether length increases, so does the variance of the pumping range.

Fig. B

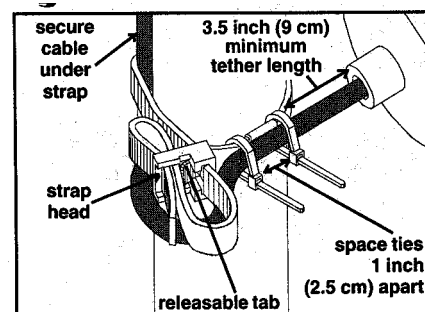
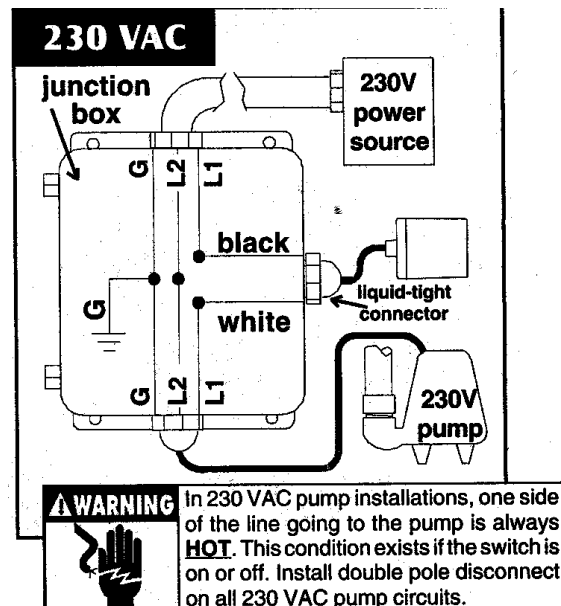


Fig. C

#### Direct Wire Install

1. Follow steps 1 through 4 of "Mounting The Switch"
2. Wire switch as shown below.
3. Check installation. Allow system to cycle to insure proper operation.



## REPLACING PARTS

### SAFETY WARNINGS

**▲ WARNING!** Risk of electrical shock. Pumps are supplied with a grounding conductor and grounding-type attachment plug on the power cord. To reduce the risk of electrical shock, be certain that it is connected only to properly grounded, grounding-type receptacle. **DO NOT** cut off ground pin or use an adapter fitting.



**DO NOT** use an extension cord with this pump. Entire plug may be cut off if a control panel is used. When wiring this pump follow all local electrical, safety codes and ordinances as well as most recent National Electric Code (NEC-ANSI/NFPA).

The D1C20-21 Series grinder pumps have a GROUND WIRE that is connected to a screw in the metal motor housing. This wire goes to the receptacle or control box which must be connected to a good outside GROUND such as a metal water pipe or GROUND STAKE driven at least 8 feet into the ground.

### DISMANTLING PUMP FOR REPLACEMENT PARTS

Before dismantling pump for replacement parts, clean pump thoroughly. Knock off all scale and deposits. Use sandblast if possible. Submerge complete unit in Clorox solution for one hour before taking apart.

### REPLACING GRINDER IMPELLER AND GRINDER SHREDDING RING

This is the only disassembly operation allowed in the field. All other repairs must be done at the factory or at an authorized service station.

#### STANDARD TOOLS REQUIRED:

1. Allen head socket set.
2. Standard socket wrench set.
3. Set of open end wrenches.
4. Plastic hammer.
5. Vise grip pliers.
6. Large screwdriver with heavy handle.
7. Three-cornered file.

**IMPORTANT:** Pump should be thoroughly cleaned of trash and deposits before starting disassembly operations.

**▲ CAUTION! DISCONNECT ALL POWER AND CONTROL WIRES TO MOTOR AT CONTROL PANEL BEFORE STARTING DISASSEMBLY OPERATIONS. NEVER RELY ON OPENING CIRCUIT BREAKER ONLY.**



### DISASSEMBLY OF SHREDDING RING AND GRINDER IMPELLER

1. Remove three screws from grinder ring flange. Grinder ring is pressed into flange for easy removal.
2. Using allen head socket wrench thread two screws

into tapped back-off holes in flange evenly tighten screws to guide grinding ring out of pump volute case.

3. Hold grinder impeller by prying against impeller cutting bar and remove cap screw from end of shaft.
4. Use large screwdriver in slot in end of shaft and bump on cutter vane with plastic hammer. Bump in counterclockwise direction as thread is right hand. It may take several bumps to loosen impeller.



If impeller cannot be loosened it will be necessary to take unit to service station for service. **DO NOT CONTINUE TO POUND ON IMPELLER AS IMPELLER AND SHAFT MAY BE DAMAGED.**

5. If impeller comes off easily, clean up and replace if worn.
6. Be sure pump impeller has not loosened when grinder impeller is removed. This can be checked on reassembly of grinder impeller and shredding ring. Tips of impeller cutter vanes should extend about 1/8" below bottom of shredding ring. If distance is more, it means the pump impeller has loosened, and if it is less, it means the shredding ring is not properly seated.

If the pump impeller has loosened, remove grinder impeller and shredding ring as described above and remove bolts from volute case and remove case. Plastic hammer can be used to bump on casing discharge to loosen. Place gasket in oil to prevent drying out. **DO NOT** loosen the pump impeller further -- it is the seat for the seal spring.

7. After case is removed, wrap emery paper around shaft and hold with vice grip pliers. Use cloth on impeller and screw up against shoulder. Now pump can be reassembled.
8. Clean all threads with wire brush and file, smooth any threads that may have been nicked.
9. Use Never-Seeze or other graphite compound on threads before replacing grinding impeller.
10. Be sure cap screw in bottom of shaft is tight. Hold impeller with a screwdriver between cutter bar and teeth of shredding ring while tightening cap screw.
11. Be sure impeller turns free by hand after reassembly. Some drag will occur due to the seal, but there should be no binding or tight spots when turning the grinder impeller.
12. If impeller rubs or drags on shredding ring, loosen bolts in shredding ring plate and tap with plastic hammer to loosen, retighten screws. Be sure to pull screw down evenly, applying pressure on all three screws. **DO NOT TIGHTEN ONE SCREW CLEAR DOWN BEFORE ADJUSTING OTHER SCREWS.**

13. **ALWAYS** use a rag on the impeller when turning to prevent cutting hands on the sharp corners of shredding ring.



## TO REPLACE CAPACITORS ONLY

**▲ CAUTION! DISCONNECT ALL POWER AND CONTROL WIRES TO MOTOR AT CONTROL PANEL BEFORE STARTING DISASSEMBLY OPERATIONS. DO NOT RELY ON OPENING CIRCUIT BREAKER ONLY.**



1. Remove oil fill plug near the top of motor housing and pour oil out.
2. Loosen the cord nut on power cord until cord is loose enough to push cord down into motor housing.
3. Remove four bolts from motor housing and bump housing with a plastic hammer to loosen. Lay pump on its side.
4. Remove the housing carefully to be sure that enough cord is pushed into the housing to create no tension on cord.
5. Slide motor housing up far enough to expose the capacitors and to be able to lay the housing down.
6. Disconnect wiring from capacitor and loosen capacitor clamp and slide capacitor out. Replace with new capacitor, tighten clamp and reconnect per wiring diagram given in this manual.
7. Check all wiring connectors to be sure they are secure.
8. Be sure tetraseal gasket is in place.
9. Slide motor housing back onto pump while pulling the cord out slowly. Assemble motor housing with four bolts.
10. Re-assemble cord nut. Be sure washers are seated and cord is pulled up against the washers. Tighten nut securely.
11. Put pump upright and refill motor with Myers submersible pump oil. **DO NOT OVER FILL WITH OIL.** See figure 1 (page 3) for oil level. Reassemble washer, gasket, nut (item 20C) in motor housing. Retighten nut firmly, but do not over tighten.
12. Be sure pump turns freely before connecting power. Turn pump on side and turn impeller, using screwdriver in slotted shaft. Plug pump into receptacle to test operation. Pump must run quiet and free of vibration.

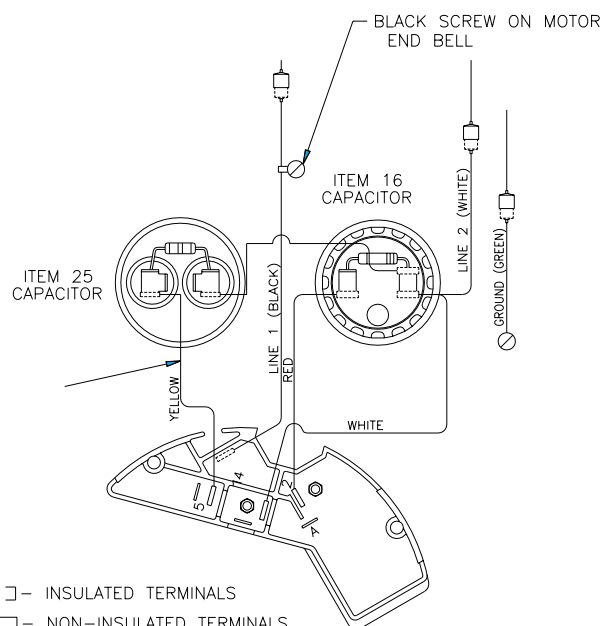
## TO REPLACE MOTOR STATOR AND SHELL

**▲ CAUTION! DISCONNECT ALL POWER AND CONTROL WIRES TO MOTOR AT CONTROL PANEL BEFORE STARTING DISASSEMBLY OPERATIONS. NEVER RELY ON OPENING CIRCUIT BREAKER ONLY.**



1. Remove motor housing as described above.
2. Disconnect all leads from power and ground wire and set pump upright.
3. Loosen four long screws holding motor and remove slowly.
4. Either remove previous capacitors and clamps from old motor and assemble onto new stator and shell or replace with new capacitors and assemble per wiring diagram.
5. Position bearing spring washer on top of upper ball bearing.
6. Position the "stator with shell" into place and line up screws with bosses and tighten the (4) long screws. Lay unit down in line with motor housing.
7. Be sure pump turns freely with screwdriver in impeller end of shaft.
8. Re-connect all terminals securely per wiring diagram.
9. Be sure tetraseal gasket is in place.
10. Reassemble motor housing and fill with oil as noted above in "Capacitor Replacement".

## WIRING DIAGRAM



## TROUBLESHOOTING

| SYMPTOMS   | SOLUTIONS  |
|--|--|
| <p><b>Pump does not run or hum.</b><br/>See A, B, C, D, E or F.</p> <p><b>Pump runs but does not deliver water.</b><br/>See G, H, I, J, K or L.</p> <p><b>Pump runs and pumps out sump but does not stop.</b><br/>See M.</p> <p><b>Pump runs but delivers only small amount of water.</b><br/>See I, J, K, L or N.</p> <p><b>Fuse blows or circuit breaker trips when pump starts.</b><br/>See K, L, N, O or P.</p> <p><b>Motor runs for short time then stops. Then after short period starts again. Indicates tripping overload caused by symptom shown.</b><br/>See K, L, N or P.</p> <p><b>For any other symptoms call Myers Service Dealer.</b></p> | <p><b>A.</b> Line circuit breaker may be off; or fuse if used, may be blown or loose.</p> <p><b>B.</b> Water level in sump may be too low. Run in more water.</p> <p><b>C.</b> Pump cord plug may not be making contact in receptacle..</p> <p><b>D.</b> If pump is using the series cord plug, the two plugs may not be plugged tight together.</p> <p><b>E.</b> Float may be stuck. Be sure float operates freely in basin. Check tether length of switch per instructions.</p> <p><b>F.</b> If all symptoms check OK, motor winding may be open; take to service center for check.</p> <p><b>G.</b> Check valve may be installed backwards. Arrow on valve points in direction of flow.</p> <p><b>H.</b> Discharge shut-off valve, if used, may be closed.</p> <p><b>I.</b> Pump may be air locked. Start and stop several times by plugging and unplugging cord. Check vent hole on pump case for plugging.</p> <p><b>J.</b> Pump head may be too high. Pump cannot deliver water over 100 ft. vertical. Horizontal distance does not affect pumping, except loss due to friction.</p> <p><b>K.</b> Inlet holes in pump base may be clogged. Remove pump and clean out openings.</p> <p><b>L.</b> Impeller or volute openings may be plugged or partially plugged. Remove pump and clean per maintenance instructions. Check tether length of switch per instructions.</p> <p><b>M.</b> Float is stuck in up position. Be sure float operates freely in basin.</p> <p><b>N.</b> Pump impeller may be partially clogged causing motor to run slow, resulting in motor overload.</p> <p><b>O.</b> Fuse size or circuit breaker is too small. Must be 20 amps.</p> <p><b>P.</b> Defective motor stator. Return to Myers service center.</p> |

## LIMITED WARRANTY

Delta Environmental Products warrants to the original purchaser of each Delta Environmental Product grinder pump system(s) that any part thereof which proves to be defective in material or workmanship within two year from date of installation or 27 months from manufacture date, (extended warranty available) whichever comes first, will be replaced at no charge with a new or remanufactured part, F.O.B. factory. Purchaser shall assume all responsibility and expense from removal, reinstallation, and freight. Any item(s) designated as manufactured by others shall be covered only by the express warranty of the manufacturer thereof. This warranty does not apply to damage resulting from accident, alteration, design, misuse or abuse. The pump must be installed, operated, and maintained in accordance with the published instructions of the appropriate Installation & Service Manual.

All dual seal grinders must have seal failure and heat sensors attached and functional for Warranty to be in effect. If a seal failure should occur, Delta Environmental Products will cover only the lower seal and labor thereof. Labor based on Authorized Service Center contract allowance. If the heat sensor is not attached and functional, Warranty is void. If the seal failure sensor is not attached and functional, Warranty is void. If the material furnished to the Buyer shall fail to conform to this contract or to any of the terms of this written warranty, Delta Environmental Products shall replace such nonconforming material at the original point of delivery and shall furnish instruction for its disposition. Any transportation charges involved in such disposition shall be for the Buyer's account. The Buyer's exclusive and sole remedy on account or in respect of the furnishing of material that does not conform to this contract or to this written warranty, shall be to secure replacement thereof as aforesaid. Delta Environmental Products shall not in any event be liable for the cost of any labor expended on any such material or for any incidental or consequential damages to anyone by reason of the fact that such material does not conform to this contract or to this written warranty.

ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED TO THE SAME EXTENT AS THE EXPRESS WARRANTY CONTAINED HEREIN. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. MANUFACTURER EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ARISING IN CONNECTION WITH THIS PRODUCT, INCLUDING WITHOUT LIMITATION, WHETHER IN TORT, NEGLIGENCE, STRICT LIABILITY CONTRACT OR OTHERWISE. Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.